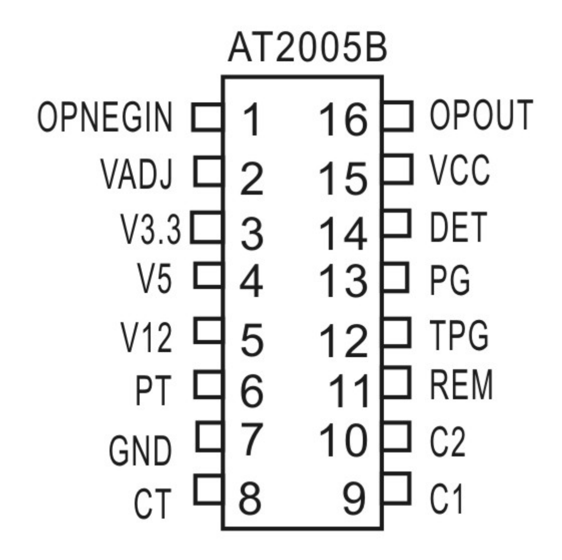
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PIN CONFIGURATION

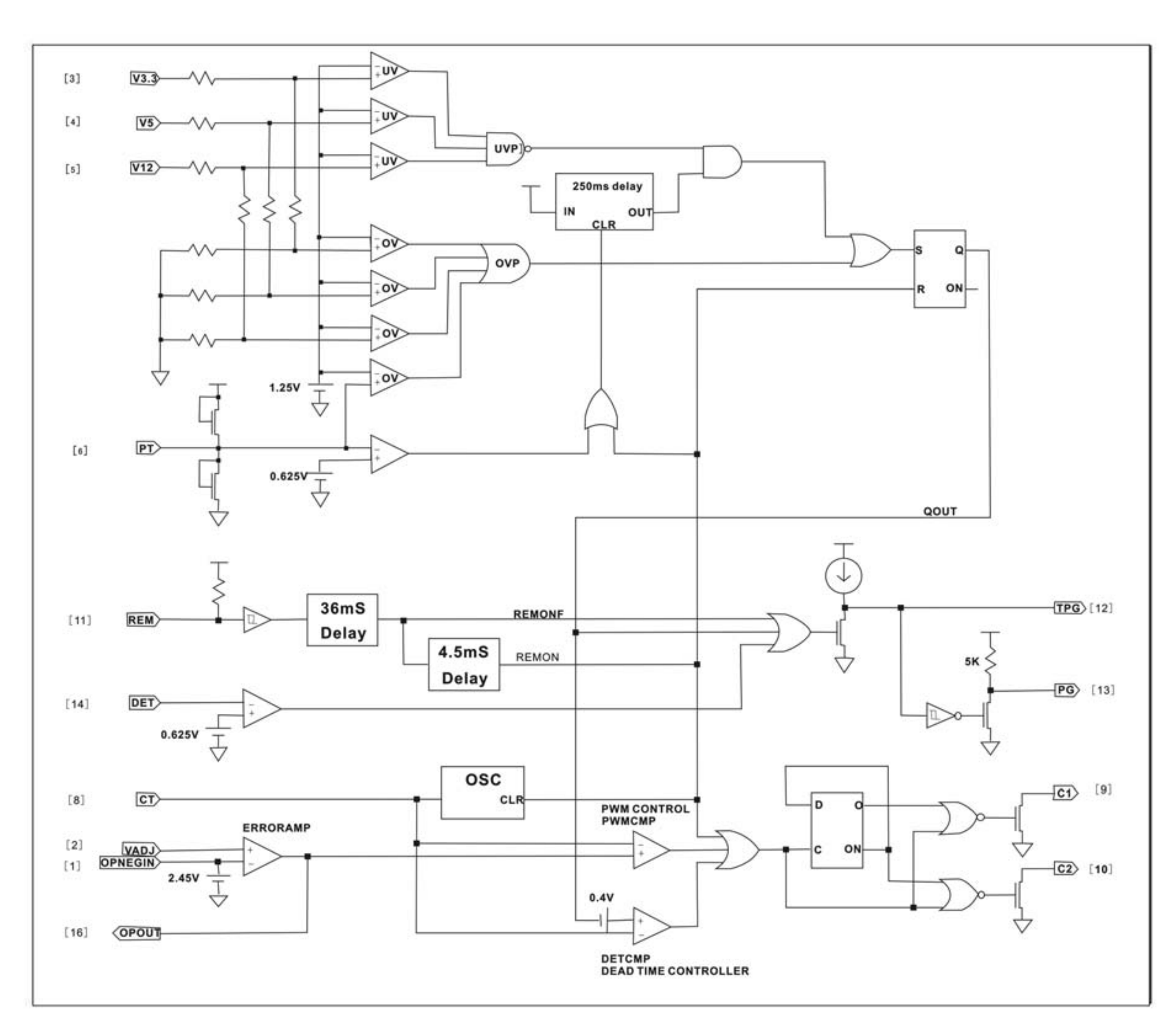


PIN DESCRIPTION

Pin No.	Pin Name	TYPE	FUNCTION
1	OPNEGIN	I	OP COMPENSATION NEGATIVE INPUT
2	VADJ	I	VOLTAGE ADJUST
3	V3.3	I	OVP/UVP INPUT FOR 3.3V
4	V5	I	OVP/UVP INPUT FOR 5V
5	V12	I	OVP/UVP INPUT FOR 12V
6	PT	I	EXTRA OVP INPUT PROTECTION
7	GND	P	GROUND
8	CT	–	OSCTILATION FREQUENCY BY SETTING CAP
9	C1	O	OUTPUT1
10	C2	O	OUTPUT2
11	REM	I	REMOTE ON/OFF INPUT,IF REM"LOW"THAT MEANS THE MAIN SMPS IS OPERATION,WHEN REM="HIGH",THE MAIN SMPS IS TURNED-OFF.
12	TPG	–	POWER GOOD DELAY TIME
13	PG	O	POWER GOOD SIGNAL IF PG="HIGH" MEANS "POWER GOOD" AND PG="LOW"MEANS"POWERFAIL"
14	DET	I	POWER GOOD SIGNAL INPUT
15	VCC	P	SUPPLY VOLTAGE
16	OPOUT	O	OP COMPENSATION OUTPUT

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BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS, VCC=5.5V

CHARACTERISTICS	SYMBOL	VALUE	Unit
Supply voltage	VCC	5.5	V
Drain output voltage	Vcc1, Vcc2	5.5	V
Drain output current	Icc1, Icc2	200	mA
Power dissipation	Pd	200	mW
Operating temperature	Topr	-10 ~ +70	℃
Storage temperature	Tstg	-65 ~ +150	℃

TEMPERATURE CHARACTERISTICS, VCC=5V

CHARACTERISTICS	SYMBOL	Min.	Typ.	Max.	Unit
Coefficient of Vref (-10℃ ~+85℃)			0.01		%/℃

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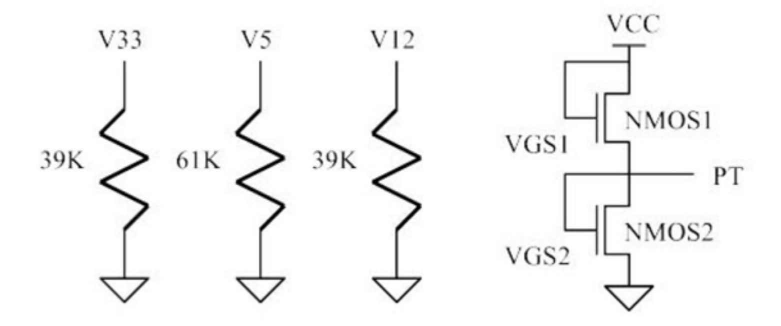
ELECTRICALCHARACTERISTICS, TA=25℃, V_{CC}=5V,

CHARACTERISTICS	SYMBOL	TEST CONDITION	Min.	Typ.	Max.	Unit
DEAD TIME CONTROL SECTION						
INPUT THRESHOLD VOLTAGE	Vthdt	ZERO DUTY CYCLE		3.0	3.3	V
		MAX. DUTY CYCLE		0.1		
ERROR AMP SECTION						
CLOSE LOOP VOLTAGE GAIN		0.5V ~ 3.5V		65		dB
CROSS OVER POINT		0dB		320		KHZ
OPNEG BIAS VOLTAGE		OPNEG OPEN	2.38	2.45	2.52	V
OUTPUT SECTION						
OUTPUT SATURATION VOLTAGE	Vdssat	Id=200mA		1.1	1.3	V
DRAIN OFF-STATE CURRENT	Idoff	Vcc=Vd=Vs=0V		2	10	uA
RISING TIME	Tr			100	200	ns
FALLING TIME	Tf			50	200	ns
PROTECTION SECTION						
OVER VOLTAGE PROTECTION (OVP)	V33		3.8	4.1	4.3	V
	V5		5.8	6.2	6.6	V
	V12		4.41	4.64	4.90	V
	PT		1.2	1.25	1.3	V
UNDER VOLTAGE PROTECTION (UVP)	V33		1.78	1.98	2.18	V
	V5		2.70	3.00	3.30	V
	V12		2.11	2.37	2.63	V
UVP DISABLE VOLTAGE	PT		0.55	0.62	0.68	V
UVP DELAY TIME	Td.uvp		100	250	500	ms
REMOTE ON/OFF SECTION						
REM HIGH INPUT VOLTAGE	Vremh		2.0			V
REM LOW INPUT VOLTAGE	Vreml				0.8	V
REM PULL HIGH VOLTAGE	Vremo		2.0		5.25	V
REM DELAY TIME	Trem		30	36	42	ms
REM OFF DELAY TIME	Toff		3.5	4.5	5.5	ms
POWER GOOD SECTION						
DETECTING INPUT VOLTAGE	Vdet		0.55	0.62	0.68	V
PG OUTPUT PULL–UP RESISTOR	Rpup, pg			5		KΩ
PG OUTPUT LOAD RESISTOR	Rpg		0.5	1	2	KΩ
CHARGING CURRENT FOR TPG	Ichg.tpg			30		uA
PG DELAY TIME	Td.pg	C=2.2uF	100	250	500	ms
OUTPUT SATURATION VOLTAGE	Vsat.pg	Ipg=10mA		0.2	0.4	V
TOTAL DEVICE						
STANDBY SUPPLY CURRENT	Icc			10	20	mA
OSCILLATION SECTION						
OSCILLATION FREQUENCY	Fosc	CT=2200P	50		60	KHZ
FREQ. CHANGE WITH TEMP.	Fosc/T	CT=2200p		2		%

APPLICATION NOTE

1.Input impedance:

Pin No.	Pin Name	Input impedance
3	V33	39KΩ
4	V5	61KΩ
5	V12	39KΩ
6	PT	279KΩ(VGS1=4.12V) 59.8KΩ(VGS2=0.88V) (VCC=5V, PT=0.88V)



2.Operation Frequency:

The period of the sawtooth is T_{OSC}:

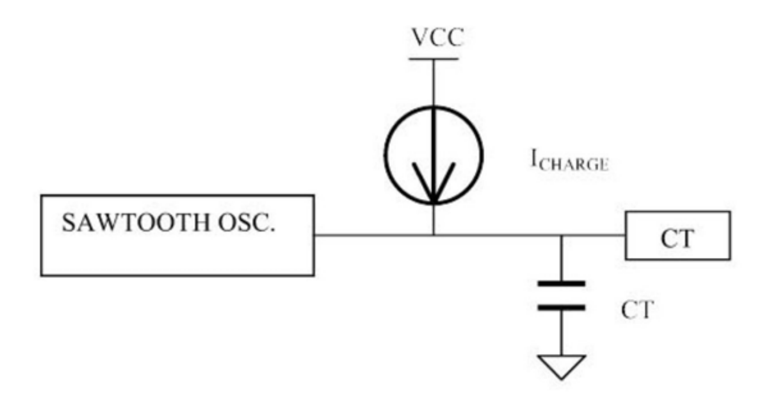
I_{CHARGE} = (1.25V / 6.1 KΩ) * 2 = 410uA

T_{OSC} = (3.3V * CT) / I_{CHARGE} =(3.3V * 2200pF) / 410uA

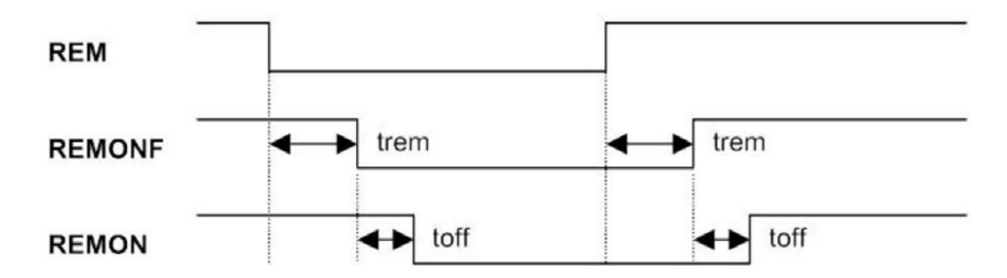
F_{OSC} = 1 / T_{OSC} = 56.5 KHZ

For Push-Pull applications:

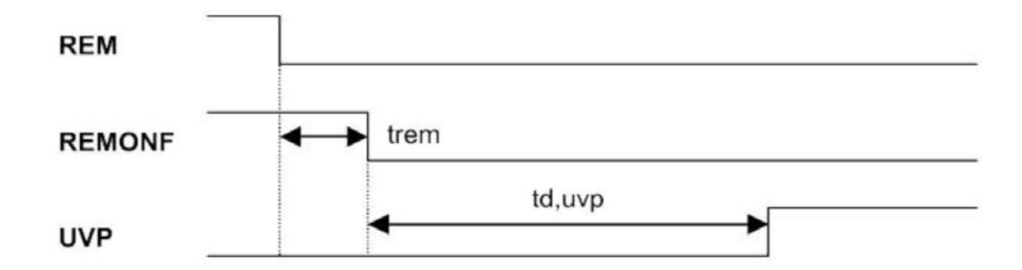
$F_{PUSH\text{-}PULL}$ = 1 / 2 T_{OSC}



3.REMOTE ON/OFF：



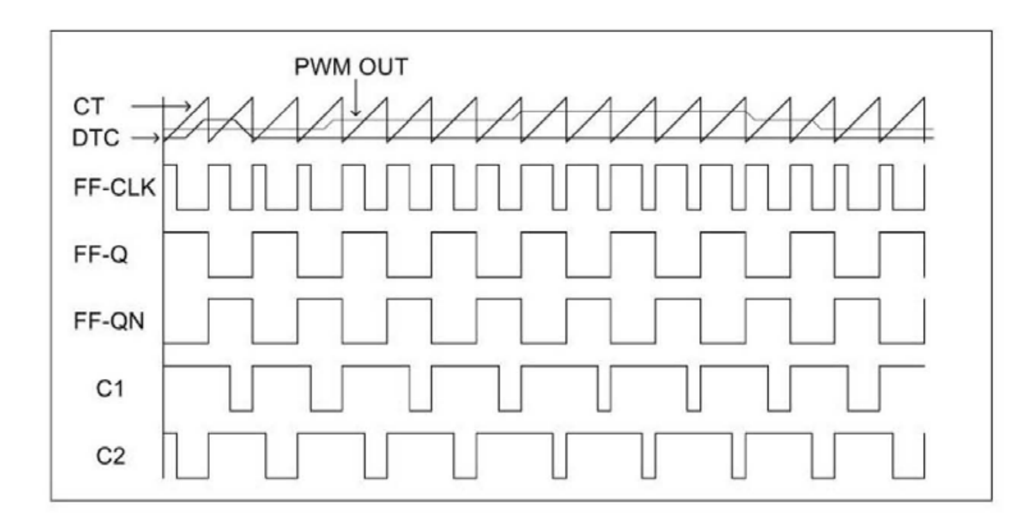
4. Under Voltage Protection Delay Time：



5. Pulse Width Modulation Block：

The output pulse width modulation is generated by comparision of the saw–tooth waveform from the capacitor C_T to the feedback of the voltage.

Therefore, an increase in feedback control signal amplitude cause a linear decrease of the output pulse width. The timing diagram is shown as below:



6. Protection Control of the Soft-Start:

The soft-start function is to reduce the large current surge during power-up & prevent the output voltages (V33/V5/V12) reach the Over Voltage Protection level . The circuit is shown in reference application circuit .

7. The function of "PT": (Default floating $V_{PT} = 0.8V$)

This signal is prepared for extra Over Voltage Protection Input ($V_{PT} > 1.25V$) or another Disable Under Voltage Protection function ($V_{PT} < 0.62V$)

8. Reference Application Ciruit:

